

**Correctional Industries**  
**preparing inmates for re-entry:**  
**Recidivism & post-release employment**

**State Report**

**For Iowa**

**Final draft report**

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### **Note to Reader**

This report provides an analysis of the PIECP program in IOWA. Refer to the full report for a full description of the background and methods (Smith, Bechtel, Patrick, & Wilson-Gentry, 2005). This report is for the use of the individual state and will not be distributed by the researchers and will not be submitted to the National Institute of Justice. If distribution occurs, it will be distributed by the state at the discretion of the state. The purpose of this report is to provide the state with its own performance in PIECP. Caution is suggested if comparisons are made to other similar programs or data, even data of which this sample was a part because of the uniqueness of the way the sample was drawn and matched. This report should not be used for determining the effectiveness of TI because of the matching process.

This report is prepared separately from the report to NIJ. However, some of the data collected during the official report is used to prepare this individual report. Therefore, the usual disclaimer is necessary.

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## Executive Summary

Using a matched sample of 1091 inmates released between April 1, 1999 and June 30, 2001, Prison Industries Enhancement Certification Program (PIECP) participants re-enter society more successfully than Traditional Industries (TI) or other than work (OTW) releasees in terms of employment. The primary findings of this research are that Iowa state prison inmates who worked in open-market jobs in PIECP were found to be significantly more successful in post-release employment. That is to say, they became tax-paying citizens quicker and remain in that status longer than TI and OTW releasees. Additionally, PIECP releasees were incarcerated post release at a slower rate than OTW releasees. This success was defined using the following seven criteria:

Measure of success	Finding
1) Proportion of time employed during the follow-up period	Average proportion of time is 60%
2) Time to first employment after release	PIECP participants obtain employment significantly faster
3) Duration of first employment	PIECP participants retain the 1 <sup>st</sup> employment significantly longer
4) Wage rate during the follow-up period	PIECP participants earn more wages and higher wages
5) Time from release to first arrest	There is no difference between the three groups.
6) Time from release to first conviction	There is no difference between the three groups.
7) Time from release to first incarceration	PIECP participants are re-incarcerated at a slower rate than OTW, but other recidivism comparisons do not differ.

## Introduction

This is the first review of the recidivism and post-release employment effects of the Prison Industries Enhancement Certification Program (PIECP) engaging state prison inmates in private sector jobs since 1979. The report is based on results from a records review of outcomes for three matched samples, each of approximately 230 Traditional Industries (TI) to PIECP and TI to other than work (OTW) releasees and 474 each for PIECP and OTW releasees, released from Iowa between 1999 and 2001. It examines whether sampled inmates participating in PIECP return to prison less frequently (e.g., recidivism effects) or enjoy more successful employment (e.g., employment effects) than otherwise similar inmates who either participated only in TI or were involved in OTW activities while in prison.

### Key findings and discussion

**The primary findings of this research are that Iowa state prison inmates who worked in open-market jobs in PIECP were found to be significantly more successful in post-release employment. That is to say, they became tax-paying citizens quicker and remained in that status longer than TI and OTW releasees.**

Based on quarterly survival rates the slope of the survival curve indicated that the PIECP releasees were employed significantly more quickly after release from prison than either TI or OTW and remained employed significantly longer. Results for TI and OTW, while significantly different than PIECP inmates, did not significantly differ from each other. Additionally, PIECP releasees were reincarcerated at a slower rate than OTW releasees. There was no difference between the groups (PIECP, TI & OTW) on

all other measures of recidivism (i.e., arrest, conviction, reincarceration). The slope of the survival curve for recidivism indicated that the PIECP participants recidivated significantly more slowly and less frequently as measured by post release incarceration. There was no difference in arrest and conviction survival rates between any of the groups. The details of these findings follow.

***Research Question 1: Does PIECP participation increase post release employment as compared to TI work and OTW?***

This research question is answered through a variety of measures. Based on a panel of experts' and states' guidance, measures for success include the following criteria<sup>1</sup>: 1) proportion of time employed during the follow-up period (e.g., the time from release from prison until the end of data collection)<sup>2</sup> (See Table 1: Post-release employment descriptive measures), 2) time to first employment after release, 3) duration of first employment, and 4) wage rate during the follow-up period. Details of each analysis are described in the following section.

***1) Proportion of time post release the releasee worked***

The general descriptive data relative to the post-release employment measures are presented in Table 1: Post-release employment descriptive measures. Employment data were available for Iowa from the first quarter of 1999 to the last quarter of 2002. Therefore, some releasees were followed for four years, while other were followed for

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<sup>1</sup> One additional measure of success is the types of PIECP occupations within prisons versus free world occupations. Currently, these data are not divided into pre-release and post-release groups. Therefore, they do not measure success but are included as general characteristics.

<sup>2</sup> Ideally, this variable would first calculate the available "street time" and then determine the proportion of available time. However, the data were not available at this time to calculate the amount of time each individual may have been unavailable for work (i.e., incarcerated).

one and one-half years. Approximately 12.3 percent (n=134) of the total sample (n=1091) had no reported earnings at any time during data collection and 16.5 percent had no reported earnings during the follow-up period (e.g., the time from release from prison until the end of data collection). The reasons for no reported earnings are unknown, but could include failure to report or record earnings, work in industries in which wages may traditionally not be reported (i.e., agriculture or illegal employment), or employment in other states. And, of course, the data include those who did not work and had no earnings. There is no way of knowing what proportion of this percentage is explained by each of these without an individual follow-up. The range of the follow-up period for this measure is a minimum of 5 calendar quarters to a maximum of 15 quarters for the sample. The average follow-up period for the entire sample is 9.4 quarters (standard deviation 2.4 quarters). Those who had no employment during the follow-up period had an average of 9.0 quarters (standard deviation 2.8 quarters), which is not statistically significantly different from the overall sample. On average, the releasees worked 60 percent of the total time available post release.

Table 1: Post-release employment descriptive measures (n=1091)

<b>Characteristic</b>	<b>n=1091</b>	<b>Percent</b>
No reported earnings pre-, during-, post- incarceration	134	12.3%
No reported earnings during follow-up	180	16.5%
Range of follow-up period	5-14qtrs	
Average follow-up period for those with reported earnings	9.5 qtrs	(2.4 s.d.)
Average follow-up period for those with no reported earnings during follow-up	9.0 qtrs	(2.6 s.d.)
Average proportion of time post release the releasee worked	60%	(0.3 s.d.)

## 2) Length of time to employment

The second measure of success for releasees was the amount of time that lapsed between release and employment. This included a comparison of PIECP, TI and OTW to each other to determine who obtained employment faster. **Based on the survival analysis, PIECP participants obtained post release employment significantly faster than either TI or OTW.** The survival rate is equal to the proportion of those who begin the quarter to those who remain at the end of the quarter without experiencing employment. The steepest slope indicates that comparably more releasees than other groups have found employment. Approximately 27 and 20 percent of the TI and OTW releasees did not have reported earnings, whereas less than 11 percent of the PIECP's did not have earnings over the course of follow-up (See Table 2: Censored cases – release to employment). (In survival analysis, the total N is the sample size, the N of events is the portion of the sample who experienced the event – employment, and the censored cases are the number of cases who did not experience the event during the follow-up period).

Table 2: Censored cases – release to employment

prefix	Total N	N of Events	Censored	
			N	Percent
NON	474	381	93	19.6%
TI	115	84	31	27.0%
PIE	502	446	56	11.2%
Overall	1091	911	180	16.5%

Additionally, there is a significant difference<sup>3</sup> between the three groups (See Table 3: Overall comparisons – release to employment).

Table 3: Overall comparisons – release to employment

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	40.598	2	.000
Breslow (Generalized Wilcoxon)	53.042	2	.000
Tarone-Ware	48.987	2	.000

Test of equality of survival distributions for the different levels of Study Group.

Further analysis determined that this difference is between PIECP and TI, and PIECP and OTW, but not between TI and OTW (See Table 4.: Comparisons TI & OTW only).

Table 4: Comparison of TI and OTW only

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	.031	1	.861
Breslow (Generalized Wilcoxon)	.064	1	.801
Tarone-Ware	.058	1	.810

Test of equality of survival distributions for the different levels of Study Group.

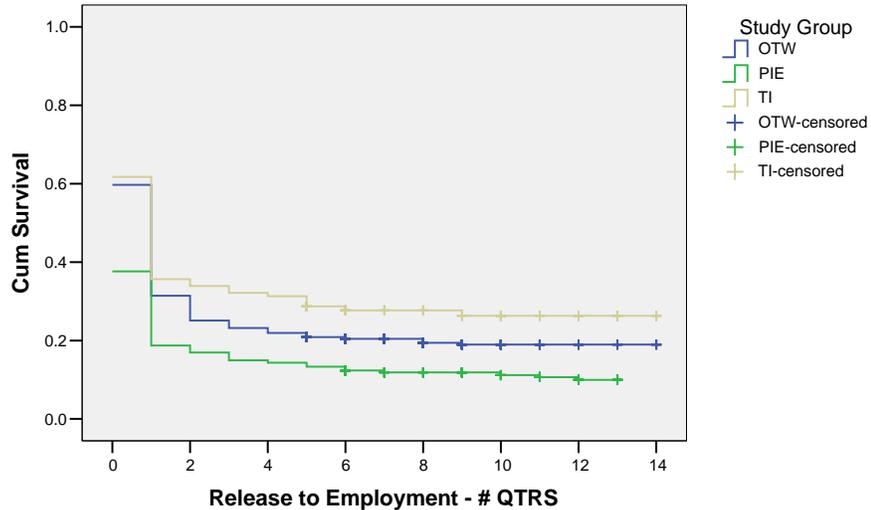
Finally, examining the survival curve provides insight into several issues relative to the time it takes for a releasee to obtain employment (See Figure 1: Survival

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<sup>3</sup> Three tests of equality across the groups are available for KM survival analysis. "Log Rank. A test for comparing the equality of survival distributions. All time points are weighted equally in this test. Breslow. A test for comparing the equality of survival distributions. Time points are weighted by the number of cases at risk at each time point. Tarone-Ware. A test for comparing the equality of survival distributions. Time points are weighted by the square root of the number of cases at risk at each time point." (SPSS, 2005, ed 13).

Function: Release to employment).

Figure 1: Survival function: Release to employment



**First, approximately 80 percent of the PIECP and 60 percent of the TI and OTW**

**obtained employment within the first quarter upon release.** Conversely,

approximately 20 percent PIECP and 40 percent of the TI and OTW releasees ended the first quarter without experiencing the terminal event (i.e., not obtaining employment, death). Once the releasee obtains employment, he or she is dropped from further

analysis shown in the survival curve. Second, survival analysis provides the amount of time that passes before the curve associated with change in status becomes flattened.

By the end of the second quarter the line has flattened. An additional 10 percentage point decline occurs over the next 3 years indicating that few releasees obtain

employment after the first quarter. **This would suggest that employment assistance**

**should be focused during the first quarter after release to assist those who obtain**

**work more readily and focused differently for the 10 to 30 percent who do not obtain employment for the remaining follow-up period.** Finally, this analysis shows which group obtained employment faster. Although it appears that TI and OTW survival curves are different<sup>4</sup>, they are not significantly different. This indicates that it took about the same amount of time for individuals in either group to obtain employment. The PIE line drops faster and remains below the other two, which shows that releasees participating in PIECP obtained employment faster than those who do not have the PIECP experience.

### **3) Duration of employment**

The third measure of success relative to post-release employment is the length of the time between first employment and the first full quarter without reported earnings or employment. A sequence of jobs or multiple jobs in one quarter (i.e., changing employment, working two jobs), is not counted as a loss of employment.

Unemployment within a quarter remains counted as employment so long as there are reported earnings within the quarter, and the releasee may be unemployed for large parts of the quarter. Hypothetically, a person only needs to work some part of one day in a quarter to be considered employed for that quarter.

The post-release duration measures are presented in Table 5: Post-release employment duration descriptive measures. Among those in the sample with one year or more of follow-up (n=1091) and three years or more of follow-up (n=289), PIECP releasees are more likely to be continuously employed than either TI or OTW. **Of the 502 available PIECP participants, 49.2 percent of them were employed for one**

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<sup>4</sup> This appearance is a result of the differences in the sample sizes between the twin sets of PIECP to TI, TI to OTW, and PIECP to OTW.

**year or more continuously and 7.0 percent of them were employed for three years or more continuously, whereas 43.9 percent and 45.6 percent of the TI and OTW releasees respectively were continuously employed for one year and approximately 7.0 and 4.9 percent of TI and OTW groups were continuously employed for over three years.** Because the follow-up period varies across the four years of post-release, some releasees had a follow-up of less than 2 years. Therefore, the survival analysis provides a better description of the findings than the periodic time series analysis.

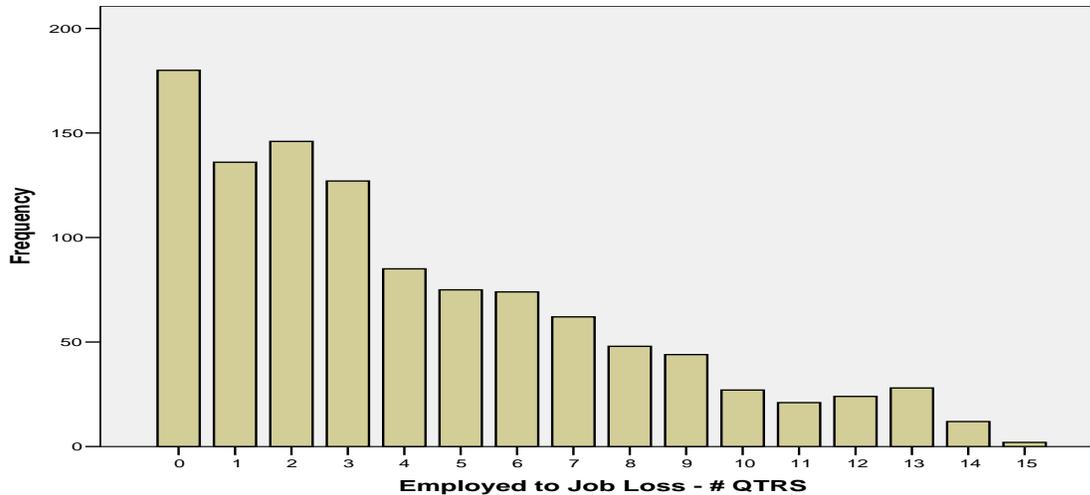
Table 5: Post-release employment duration descriptive measures (n=1091)

Characteristic	n= 1091		Percent	
Range of time employed	0-15 quarters		4.2 qtrs (3.7 s.d.)	
	PIECP		TI	OTW
Never employed	56	(11.2%)	31 (27.0%)	93 (19.6%)
Employed continuously 1yr +	247	(49.2%)	39 (43.9%)	216 (45.6%)
Employed continuously 3 yrs +	35	(7.0%)	8 (7.0%)	23 (4.9%)

The average length of duration of employment for all three groups is best represented by the median of three quarters as a result of the skewed distribution caused by the large number of releasees who do not obtain employment during the follow-up period or are employed for less than four quarters (See Figure 2: Employment

duration).

Figure 2: Employment duration



Measuring employment duration included a comparison of PIECP, TI and OTW to each other to determine who retained employment longer. Based on the survival analysis, PIECP participants retained employment significantly longer. The survival rate is equal to the proportion of those who begin the quarter employed and remain to the end of the quarter employed. The least steep slope is best because it indicates that comparably more releasees have retained employment. Between 10.4 and 15.5 percent of the releasees remained employed at the end of the follow-up period (See Table 6: Case processing summary – employment duration). In other words, the releasees did not lose employment during the follow-up period, so they were censored from the analysis during the quarter in which the individual's follow-up period ended.

Table 6: Case processing summary – employment duration

prefix	Total N	N of Events	Censored	
			N	Percent
OTW	474	424	50	10.5%
TI	115	103	12	10.4%
PIE	502	424	78	15.5%
Overall	1091	951	140	12.8%

Additionally, there is a significant difference between the three groups (See Table 7: Overall comparisons – employment duration).

Table 7 Overall comparisons – employment duration

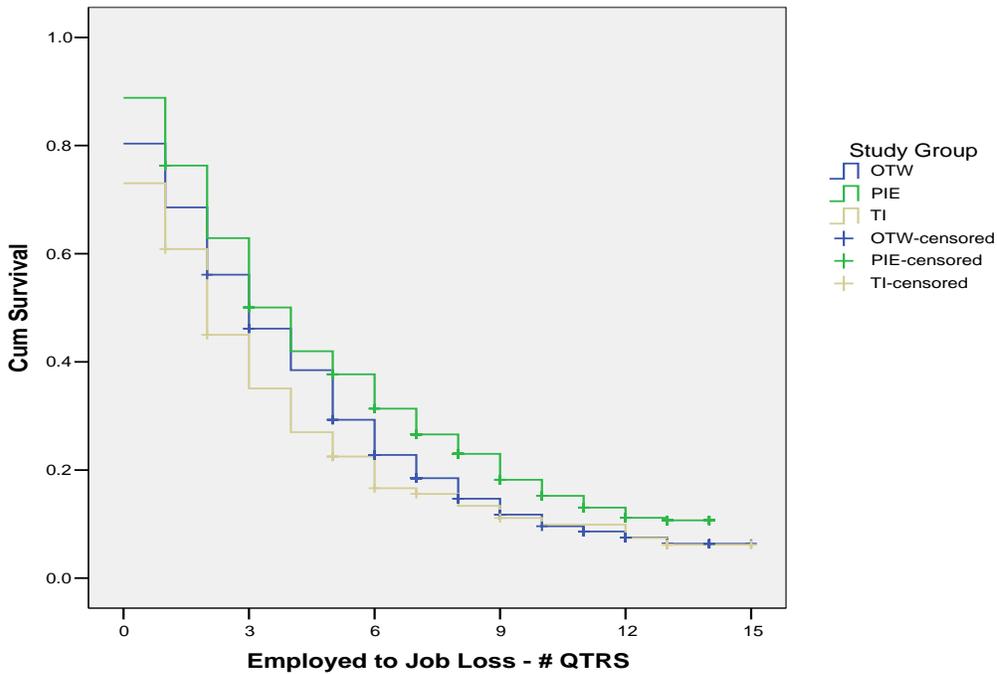
	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	17.519	2	.000
Breslow (Generalized Wilcoxon)	21.495	2	.000
Tarone-Ware	20.384	2	.000

Test of equality of survival distributions for the different levels of Study Group.

Once again, the analysis demonstrates the significant difference is between PIECP and TI, and between PIECP and OTW, not between TI and OTW.

Finally, examining the survival curve provides insight into employment duration (See Figure 3: Survival function: employment duration).

Table 3 Survival function – employment duration



First, PIECP releasees retain employment longer than TI or OTW releasees (See Figure 3 Survival function – employment duration). Nevertheless, over 50 percent of all three groups had a full quarter of unemployment by the end of the third quarter after release.

### 5) Wage rate

Finally, wages earned by the sample were examined. Approximately 41% of the releasees earned at an hourly rate less than the Federal minimum wage during the post release follow-up period. It is possible that the sample were either under-employed (i.e., working part time or working intermittent) or under-paid.

Table 8 Wages earned post-release

	PIECP	TI	OTW
Wages earned (mean)	\$24,287	\$18,667	\$19,906
# quarters employed at least one day (mean)	6.6 quarters	5.6 quarters	5.9 quarters

In addition, there is a significant difference between PIECP and TI, PIECP and OTW, but not between OTW and TI based on the t test on the amount of wages earned.

***RQ 2: Does PIECP participation reduce recidivism as compared to TI work or OTW?***

The analysis for recidivism is similar to post release employment. Recidivism is measured in the three traditional ways; new arrest, conviction, and incarceration. Technical violations were not measured as a new arrest. Survival analysis measures how long a releasee is in the free world community until he or she recidivates. The terminal event for the analysis may be an arrest, conviction or incarceration. At that time, the individual is removed from further analysis. Therefore, this measure does not take into account future free world time or additional recidivism measures. This analysis technique allows the survival curve to measure the percent of those who are still in the free world at the end of each interval for the first recidivism event. Recidivism is measured in units of days from the time an individual was released from prison to the time in which he or she was first arrested, convicted or incarcerated.

The three measurements are based on the recidivism definition debates over the years. One school of thought is that the number of arrests over count crime. Others think that convictions are only incidents that can be proven in court, thereby undercounting crime. And, finally, others think that measuring re-incarceration is best because prison should be responsible for reducing prison stays.

The follow-up period began on the date of release into the community (e.g., any day between April 1, 1999 and June 30, 2001) until mid 2003. This results in a follow-up period of slightly less than two years up to four and one-half years.

## Arrest

This matched sample of releasees have relatively low recidivism rates. The average amount of time from release to first arrest is approximately 813 days, suggesting that many (84 percent) of the releasees were arrest free at the end of the first year. The range of time between the time released and the time arrested is 6-1532 days. **Almost 52.2 percent of those in PIE successfully reentered society, whereas approximately 51 and 52 percent of the TI & OTW were not arrested during the follow-up period.** The rate of success at the end of the first year is high for all three groups, 64.7 percent of PIECP, and 69.6 percent for TI and 70.2 percent for OTW did not get arrested in the first year post release. Convictions and incarcerations are higher than we would expect in a random sample of released inmates.

Table 9: Release to arrest

Total sample size	1091		
No post-release arrests	568 (52.1%)		
Range from release to arrest	6-1532 days		
	<b>PIECP</b>	<b>TI</b>	<b>OTW</b>
No post-release arrest	262 (52.2%)	59 (51.3%)	247 (52.1%)
Success rate for one year (no post-release arrest during 1 <sup>st</sup> year)	325 (64.7%)	80 (69.6%)	333 (70.2%)
No post-release conviction	336 (66.9%)	77 (67.0%)	327 (69.0%)
No post-release incarceration	478 (95.2%)	110 (95.7%)	433 (91.4%)

Measuring recidivism included a comparison of PIECP, TI and OTW to each other to determine who stayed crime free longer. Based on the survival analysis, PIECP participants stayed crime free significantly longer in comparison to OTW for reincarceration. The survival rate is equal to the proportion of those who begin the quarter arrest free post release and remain to the end of the quarter arrest free. The slowest dropping survival curve is best because it indicates that comparably more releasees have remained arrest free.

Between 50.9 and 53.3 percent of the releasees remained arrest free at the end of the follow-up period (See Table 10: Case processing summary – arrest). In other words, the releasees did not get arrested for a new crime during the follow-up period, so they were censored from the analysis during the quarter in which the individual's follow-up period ended. There is no statistical difference between the three groups.

Table 10: Case processing summary – arrest

prefix	Total N	N of Events	Censored	
			N	Percent
OTW	460	220	240	52.2%
TI	110	54	56	50.9%
PIE	475	222	253	53.3%
Overall	1045	496	549	52.5%

## Convictions

Between 67.9 and 69.5 percent of the releasees remained conviction free at the end of the follow-up period (See Table 11: Case processing summary – conviction). In other words, the releasees did not get convicted for a new crime during the follow-up period, so they were censored from the analysis during the quarter in which the

individual's follow-up period ended. However, there is no statistical difference between the three groups.

Table 11: Case processing summary – conviction

prefix	Total N	N of Events	Censored	
			N	Percent
OTW	462	141	321	69.5%
TI	111	35	76	68.5%
PIE	480	154	326	67.9%
Overall	1053	330	723	68.7%

### Incarcerations

Between 91.2 and 95.6 percent of the releasees remained incarceration free at the end of the follow-up period (See Table 12: Case processing summary – incarceration). In other words, the releasees did not get incarcerated for a new crime during the follow-up period, so they were censored from the analysis during the quarter in which the individual's follow-up period ended.

Table 12: Case processing summary – incarceration

prefix	Total N	N of Events	Censored	
			N	Percent
OTW	468	41	427	91.2%
TI	114	5	109	95.6%
PIE	490	22	468	95.5%
Overall	1072	68	1004	93.7%

Additionally, there is a significant difference between the three groups (See Table 13: Overall comparisons – incarceration).

Table 13: Overall comparisons – incarceration

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	9.367	2	.009
Breslow (Generalized Wilcoxon)	8.618	2	.013
Tarone-Ware	9.076	2	.011

Test of equality of survival distributions for the different levels of Study Group.

Further analysis identifies a significant difference between PIECP and OTW, but not between PIECP and TI or TI and OTW (See Table 14: Comparison TI & OTW only – incarceration).

Table 14: Comparison PIECP & OTW only – incarceration

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	7.531	1	.006
Breslow (Generalized Wilcoxon)	6.352	1	.012
Tarone-Ware	6.948	1	.008

Test of equality of survival distributions for the different levels of Study Group.

Finally, examining the survival curve provides insight into post release (See Figure 15: Survival function- incarceration). The difference in post release incarceration does not appear to be different until 500 days have passed from release.

Figure 15: Survival function- incarceration

